



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/815,499	04/01/2004	Peter Chou	GS 201	8212
27774	7590	04/21/2006	EXAMINER	
MAYER & WILLIAMS PC 251 NORTH AVENUE WEST 2ND FLOOR WESTFIELD, NJ 07090			DOAN, THERESA T	
			ART UNIT	PAPER NUMBER
			2814	

DATE MAILED: 04/21/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/815,499

Applicant(s)

CHOU ET AL.

Examiner

Theresa T. Doan

Art Unit

2814

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 03 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 09 March 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) 10-18 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-3, 6 and 7 is/are rejected.
- 7) ☒ Claim(s) 4, 5, 8 and 9 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### *Election/Restrictions*

1. Applicant's election without traverse of claims 1-9 in the reply filed on 03/09/06 is acknowledged.

### *Claim Rejections - 35 USC § 102*

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 1-3 are rejected under 35 U.S.C. 102(e) as being anticipated by Smith et al. (U.S. Pub. 2003/0234444).

Regarding claim 1, Smith (Fig. 1) discloses a semiconductor device 10, comprising:

- a bottom lead frame 14 having at least one tilt flap;
- a die 12 attached on the bottom lead frame 14 ([0017], lines 1-4);
- a top conductive element 16 attached on the die 12 ([0017], lines 6-7); and

a molding compound 19 for molding the semiconductor device 10, wherein the molding compound 19 surrounds the at least one tilt flap to lock the molding compound onto the bottom lead frame ([0017], lines 7-9).

Regarding claim 2, Smith discloses the bottom lead frame 14 has a first edge and a second edge (see Fig. 1), the first edge opposite the second edge, and the second edge of the bottom lead frame 14 having a reduced portion extending outward from the die-attached portion of the bottom lead frame, wherein the reduced portion has a portion of the bottom lead frame removed from each of opposite sides thereof.

Regarding claim 3, Smith (Fig. 1) discloses the at least one tilt flap is provided at the first edge and extends outward from the bottom lead frame.

4. Claims 1 and 6 are rejected under 35 U.S.C. 102(e) as being anticipated by O'Shea et al. (U.S. Pat. 6,919,625).

Regarding claim 1, O'Shea (Fig. 2A) discloses a semiconductor device 100, comprising:

a bottom lead frame 120A/121A having at least one tilt flap;

a die 110A/110B attached on the bottom lead frame 120A/121A (column 4, lines 40-56);

a top conductive element 130 attached on the die 110A/110B (column 4, lines 57-61); and

a molding compound 140 for molding the semiconductor device 100, wherein the molding compound 140 surrounds the at least one tilt flap to lock the molding compound onto the bottom lead frame (column 5, lines 9-12).

Regarding claim 6, O'Shea (Fig. 2A) discloses that the semiconductor device 100 is a rectifier of surface mount package (column 2, lines 1-2).

***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Smith et al. (U.S. Pub. 2003/0234444) in view of Carter, Jr. et al. (U.S. Pat. 6,465,274).

Smith does not disclose the thickness of the bottom lead frame is less than 10 mils.

However, Carter (Fig. 19) teaches a thickness of the bottom lead frame 1602 is about 8 to 10 mils (column 5, lines 32-35) to provide lower cost and better assembly (column 2, lines 52-54). Accordingly, it would have been obvious to one having ordinary skill in the art at the time of the invention was made to modify the device structure of Smith by forming the thickness of the bottom lead frame is less than 10 mils to reduce the size of lead frame for providing lower cost and better assembly, as taught by Carter

Art Unit: 2814

(column 2, lines 52-54). Furthermore, it has been held that when the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation. In re Aller, 220 F.2d 454, 105 USPQ 233, 235 (CCPA 1955).

### ***Allowable Subject Matter***

7. Claims 4-5 and 8-9 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The prior art of record fails to disclose all the limitations recited in the claims 4-5. Specifically, the prior art of record fails to disclose the second edge of the bottom lead frame further comprises at least one tilt flap extending inward towards the bottom lead frame.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Theresa T. Doan whose telephone number is (571) 272-1704. The examiner can normally be reached on Monday to Friday from 7:00AM - 4:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, WAEL FAHMY can be reached on (571) 272-1705. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



TD  
Patent Examiner  
April 10, 2006.